detects the vacuum provided by the vacuum table, and the sensor can be coupled to the CPU which receives information from the sensor.

In some embodiments, transport belt is made from woven polyester such as, for example, a reinforced polyurethane. The transport belt can have a thickness of about 0.09 inch, and the holes of the transport belt can be spaced apart by about 1 inch, and have a diameter of about 0.1 inch.

In other embodiments, the transport belt is made from stainless steel which can have a thickness of about 0.008 inch. The porous sheet can be made of sintered, porous polyethelene, and have a thickness of about 0.5 inch.

In a related aspect of the invention, a method for transporting a substrate in a printing system includes generating a vacuum with a vacuum table for holding the substrate on a transport belt, and maintaining the vacuum at a desired level as the area of the transport belt covered by the substrate varies as the substrate is transported though the printing system.

In some embodiments, the desired level of vacuum is maintained from about -0.05 psi to about -0.3 psi. In certain embodiments, a porous sheet which acts as a flow restrictor is used to distribute the vacuum over a region of the transport belt.

Among other advantages, the vacuum table is able to generate a vacuum that need not be varied as the substrate covers varying portions of the belt. The porous sheet facilitates drawing a continuous vacuum with the vacuum table, while making no further adjustment to the vacuum level as one or more substrates are transmitted through the printing system during the print process. This feature is applicable to both continuous substrates, for example, those supplied from a roll, as well as non-continuous substrates such as a flexible or a rigid sheet supplied individually.

During the printing process, as the substrate 32 is fed by the feed wheel 30, the position sensor 55 detects the height of the dancer 34. This height information is transmitted to the feed controller 54 which in turn adjusts the power to the feed motor 53 to increase or reduce the feed speed, or to reverse the feed direction of feed wheel 30 such that a constant tension is maintained in the substrate. A constant tension is desired to maintain positional accuracy of the substrate and to remove any wrinkles in the substrate while it moves through the printing system.

The printing system 10 can detect thickness variations of the substrate regardless of the width of the substrate or the position of the substrate relative to the width of belt 18. This capability is illustrated in FIGS. 3A and 3B. As shown, the thickness indicator roller 20 rotates freely about a bar 21 that is supported by a pair of ratchet/gear mechanisms 57, each of which includes a gear 58 engaged with a rachet 59. Thus when a substrate causes the height of indicator roller 20 to vary, both of the gears 58 rotate so that the indicator roller 20 is at the same height, "h", along the width, "w_1", of the belt 18 regardless of the width, "w_2", of the substrate 32 that is fed to the printer system. Note that the vertical position, "y", of the dancer 34 (FIG. 2) is also controlled by a similar ratchet/gear mechanism. Alternatively, a laser triangulation device is used to determine the thickness of the substrate.

Referring now to FIGs. 4A and 4B, the rail system 14 includes a top rail 60 and a bottom rail 62. These rails are attached to a set of spacer support plates 64 by a set of screws 65 along a bottom and a top machined V-groove 66a and 66b, respectively. These grooves 66 provide a two-point contact with each of the rails 60 and 62. This two-point contact is maintained along the entire length of the rails 60 and 62. The set of support plates 64 is attached to a support beam 67 of the base 12 by a series of set screws 68. The horizontal displacement, "x", of the support plates 64 with respect to the support beam 66 is adjusted by a set of horizontal jack screws 70. Each horizontal jack screw 70 is associated with a bellvile washer 71 that pushes the support plates 64 away from the support beam 66 to assure that the horizontal jack screws 70 are always under tension. The vertical position, "y", of the support plates 64 is adjusted by a set of

16. A method for transporting a substrate in a printing system, comprising:

generating a vacuum with a vacuum table for holding the substrate on a transport belt; and

maintaining the vacuum at a desired level as the area of the transport belt covered by the substrate varies as the substrate is transported though the printing system.

17. The method of claim 16, wherein the desired level of vacuum is maintained from about -0.05 psi to about -0.3 psi.

18. The method of claim 16, wherein maintaining includes using a porous sheet to maintain the vacuum at the desired level.

19. The method of claim 18, wherein the porous sheet acts as a flow restrictor.

20. The method of claim 18, wherein the porous sheet distributes the vacuum over a region of the transport belt.